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have sprung from the same roots that bore the white flowers observed the year previous, they having apparently resumed their specific color.

During the autumn of 1868 I discovered in Northern Iowa a specimen of *Liatris cylindrica* with perfectly white flowers, all the flowers upon the three stalks from the same root being white. This seems more remarkable than that of the white clover mentioned, because the usual color of the latter is at best only specific, while rose-red is regarded as the invariable color of all the species of *Liatris*. In other words, the color is a generic character. — C. A. WHITE.

[We print this notice, with the remark, once for all, that occasional white flowers may be expected in any species, so that it is hardly worth while to specify numerous particular instances.—Eds.]

ZOOLOGY.

POISON OF THE COBRA. — At the meeting of the Boston Society of Natural History, January 18th, Mr. George Sceva gave the results of an experiment which he had recently made in connection with Dr. Thomas Dwight, Jr., with the poison of the Cobra di Capello, *Naja tripudians*.

January 8th, one quarter of a grain of the dried poison, which had been kept a little more than seven months, was put into twenty drops of water, the poison dissolved, and the liquid reduced by evaporation at a temperature of 85° F., to four drops. This was exposed to the air at a temperature of 22°, and was completely frozen in four minutes, the warmth of the porcelain vessel retarding the process slightly. The poison was allowed to remain in the frozen state for sixteen hours, during which time the temperature fell to 8°, or 24° below the freezing point. On the following day, January 9th, the poison was thawed and diluted with three or four drops of water, and two drops of the liquid injected with a fine-pointed syringe into the pectoral muscle of a pigeon, about half an inch from the keel of the sternum, the point of the syringe penetrating the muscle about one eighth of an inch. This part of the pigeon's body was selected in order to avoid wounding any of the viscera or large blood vessels.

The poison was injected at 4.32 P. M. At 4.34 there was a motion of the bowels. Although this almost invariably occurs, as the first symptom of the action of the poison in the lower animals, yet it cannot be fully relied on in the case of birds, as it frequently occurs from fright.

At 5.10 another motion of the bowels, followed by slight tremors and convulsive movements, clearly indicating the action of the poison.

At 5.15 no further symptoms of importance appeared. At this time he left the room for about two hours, and on returning, at a few minutes past 7, found the pigeon dead; its death having occurred in less than two hours and a half from the time of being poisoned.

Mr. Sceva then made some general remarks on the habits of the Cobra, and on the action of its poison. He said he had been much surprised, in looking over some works on natural history, at the erroneous statements on this subject which many of them contained. He thought these errors might be attributed, in a great measure, to the general aversion which people felt for all poisonous reptiles. This seems to account, when combined with the usual credulity shown in such matters, for the many strange stories and absurd reports that had been published of the poisonous snakes of distant countries, such as India; and in many instances he had found that men holding high positions in the Government civil service and physicians residing in that country, had published statements which had been accepted here and in Europe, as facts well established by their personal observations and careful investigations; whereas they were founded merely on the stories told by the jugglers, snake-charmers and other ignorant people. In some popular works on natural history recently published, which on many subjects appeared to be carefully written, there seemed, in this matter, a great want of careful discrimination. In J. G. Wood's "Natural History of Reptiles," several pages were devoted to accounts of antidotes, such as the leaves and roots of the *Aristolochia Indica*, the "Snake Stone," etc. These, with a great many other reputed antidotes, had been found by recent investigation to be utterly worthless.

Mr. Sceva, during the past three years, while attached to the Indian Museum at Calcutta, had assisted Dr. Fayrer, the Professor of Surgery in the Medical College there, in his numerous ex-

periments with the venom of poisonous snakes. Among those made to test the value of local applications was that of the actual cautery by plunging pointed red-hot irons deeply into the flesh in the places where the fangs had entered, but this failed to destroy the poison.

This result, however, would not surprise one who fully understood the rapidity with which the blood passes through the soft tissues of the body, and the instantaneous action of the poison upon it.

To show the rapid effect of the poison on the blood, Mr. Sceva read one of Dr. Fayrer's experiments that he had witnessed, in which the inguinal fold of the skin of a dog was held by two pairs of long-bladed forceps in such a manner as to include a triangular piece of about three inches in length. The Cobra's fangs were applied to the middle of the free edge, and with a sharp scalpel, held in readiness, the fold of skin was at once cut out, and yet the dog died from the effects of the poison in fifty-nine minutes. Dr. Fayrer, in his report, made the following comments:—

“This was a very interesting and instructive experiment, most clearly demonstrating the deadly nature of the virus and the awful rapidity with which it passes into the circulation. The bitten part was not merely excised, as we speak of excising the parts around the spot which the fangs had penetrated, but the fold of skin into which the fangs had injected the poison was removed within a second after the bite; for the knife had entered almost before the fangs had left. In fact, it could not have been done more rapidly, and yet, within one hour, the animal was dead from the effects of the poison. The infinitesimal portion of time during which the Cobra's fangs were inserted in the tissues was sufficient to have sent the poison through the circulation beyond the reach of incision, and yet how very small must that portion have been.”

Mr. Sceva exhibited on the table a living specimen of the Cobra, which he had brought with him from India. It was about five feet in length, and of the variety known in India as the Keuteah. It had eaten nothing while it had been in his possession (since the 8th of June last), a period of seven months and ten days. He had also kept others in India for over five months without food.

He said the common belief that the Cobra would seek to exercise its deadly power by biting any person who should come within its reach, was quite erroneous. On the contrary, it avoids using its fangs as much as possible, except when securing its food. When

two Cobras were placed together in a cage, they would sometimes strike at each other for hours with their noses, and would blow their venom and saliva from their mouths ; but he had never seen one bite another, although he had kept a large number of them in cages convenient for observation.

Of the great numbers of deaths (some thousands) occurring annually from Cobras, the bites were almost always received when people stepped upon them.

Until very recently it was almost universally supposed that the poison of the Cobra had no effect on the mongoose, an animal resembling the weasel. It was well known that the mongoose would attack and kill the Cobra, and would sometimes eat a large part of the body, but in these encounters the mongoose, by his great agility, could easily avoid being bitten ; and Mr. Sceva had found, on examining a Cobra which had been killed by a mongoose, that all the wounds had been inflicted back of the head. When, however, the mongoose was secured, and a Cobra was compelled to bite its leg, by having it put into the snake's mouth, the mongoose died in a very short time.

Mr. Sceva added, that since making the experiment with the frozen poison, he had found that a similar one had been made on the venom of the rattlesnake by Dr. S. Weir Mitchell of Philadelphia. Dr. Mitchell also found that neither boiling nor a putrefactive change destroyed its poisonous action. These experiments have also been made with the venom of the Cobra with like results.

DISTRIBUTION OF ANIMALS IN THE SOUTH SEAS.— Having previously explored nearly every South Sea group, I was surprised at the superior richness of the Viti Islands, as compared to the other locations. Of shells alone, I got about fourteen hundred species, and new ones were occurring, up to the time of my departure. I have not the least doubt but that the group will produce six hundred species more. At the Navigators I found nearly eight hundred species. Tahiti produced five hundred. So it is evident that the nearer we approach the East Indies the richer the Islands become in shells. The same rule applies to every other department of Natural History.

Since I have been collecting in the South Seas I have ascertained that nearly every group has some species of marine shells peculiar to that one location, and which do not occur elsewhere.

Again, certain species are abundant at some particular group, and gradually become more and more rare as we recede from their metropolis, or specific centres.

Each group of islands has distinct species of land shells, and, in fact, every island in a group possesses its peculiar species. For small species of land shells, *Stenogyra juncea* and *Vertigo pediculus* range over the South Sea Islands, and are the only exceptions to the rule. What is most surprising, in most cases, is that we find the species confined to particular valleys, or certain parts of the islands. The small islands are generally richer in species than the larger ones. Succineæ, so abundant at the eastern groups, do not occur at the Viti Islands, while the latter possess many species of large Bulimi, belonging to the section Charis and Placostylus, which are not found at the former islands. Another marked feature in the Viti land shells is the large ground species of Navini. Its mangrove swamps swarm with many species of Auriculidæ, and the rivers abound in large Butissæ.

Fresh water shells are more widely diffused than land shells. Three of the Tahiti *Neritinae* (*Tahitensis*, *dilatula*, and sp?) occur at Samoa, but not at the intermediate groups. Several species of the Samoa (Navigator Isles) *Neritina*, *Navicella*, and *Melania* are common at the Viti group. The fresh water shells of the Sandwich Islands are all peculiar.

The Viti Islands are extraordinarily rich in Mitridæ and Pleurotomidæ. Of the former I found one hundred and thirty, and of the latter one hundred species.

Most of the Viti fish, crustaceans and echinoderms, are identical with Tahiti species, though many new species were obtained. Nature has been rather chary of her entomological gifts to her eastern groups; but in the Vitis it is quite the reverse. I found a great variety of Lepidoptera and Coleoptera, some of the latter of great size and beauty. *Macrotoma heros*, a beetle, attains a length of four and a half inches, and a large *Dorcus* abounds. The larvæ of both species are considered a delicacy by the natives and relished by some of the foreigners.

At the Vitis I found many new species of reptiles, and, for the first time, met with frogs and land snakes. One lizard, *Brachylophus fasciatus*, attains a length of three feet. Every species of reptile is eaten by the natives.

While I was in the group, the natives killed the Rev. Mr. Baker

and eight native teachers. Cannibalism is still common at the islands, and many parts of the group are too dangerous to explore. — A. GARRETT.

SEXES OF THE LOBSTER. — A Correspondent of "Land and Water," makes an announcement, which is endorsed by the editor of that paper, to the effect that the sex of Lobsters can be readily determined by the character of their claws, since, in nearly fourteen hundred specimens examined, it was ascertained that in the male, the blunt, tufted claw is always on the left side, and the sharpest serrate claw on the right, a condition of things exactly reversed in the female. This, however, has been subsequently denied, and the question of determining the sex by means easily understood by the laity, yet remains open.

OCCURRENCE OF LAND BIRDS FAR OUT AT SEA. — We are indebted to the Smithsonian Institution for the following extract from a letter received from the Hon. L. E. Chittenden, in reference to certain birds which came on board the vessel in which he was proceeding to Europe. Frequent mention is made, in the writings of travellers, of birds having been seen far out at sea; but it is not often that so satisfactory an identification of the species is supplied, as that furnished by Mr. Chittenden's letter.

"STEAMER LAFAYETTE, 12 M., Oct. 19th, 1869.

Latitude $41^{\circ} 40'$; longitude $64^{\circ} 9'$; distance sailed last twenty-four hours, 310 miles. Distance from New York, 589 miles. To Brest, 2441 miles. There has been a strong wind from the north-west the last twenty-four hours. Shortly after daylight this morning, land birds began to alight on the ship. The sailors have caught many, some twenty-five or thirty. They seem very weary and disinclined to move after having alighted, and are easily caught. *They must have been blown off the land*, but it is singular that so many should have been blown away by a wind which is far from being that of a gale. They fly straight to the ship and alight; do not circle around at all. I have been showing the sailors what to feed them with. They have produced several cages, and are having quite an aviary. Among those taken were the following:—Bluebird (*Sialia Wilsonii*); Yellow-bellied Woodpecker (*Picus varius* Wils.); Field Sparrow (*Spizella pusilla* Wils.), several specimens; Chipping Sparrow (*Spizella socialis*); another sparrow, name unknown, but with a white throat, breast and lower part of body yellowish red (probably *Passerella iliaca*); a creeper, probably Brown Tree Creeper. A flycatcher, either the common Pewee or the Wood

Pewee, I think the latter; and two warblers, which I could not recognize, as they were both probably females with no special, distinctive marks."

"This is the entry, with the portions in parentheses added now. The route of the French ships is far to the southward of all the other steamers. You will see from the map that we came about three hundred miles south of Nova Scotia, a rather long flight for the birds. Some of them died, but the greater number fed well, and when we were in Brest harbor I made the sailors set them free. So you may hear of the discovery of several new species in the north of France."

"I told you that I thought there was a robin among the birds that came on board ship; such is my recollection. But it is not mentioned in my note, and I think I must have been mistaken."

IOWA BIRDS.—The following species, not catalogued in J. A. Allen's excellent "Notes on Iowa Birds" (Mem. Bost. Soc. Nat. Hist., Vol. I., Pt. IV.), have been collected by me in Iowa, and are mostly preserved in the cabinet of Iowa College, Grinnell. When no locality is given, the central adjoining counties of Poweshiek and Jasper are to be understood. In two cases of doubt, an interrogation point is added. The word "summer" for summer resident, is used when justified by recorded dates of capture.

Turdidæ:—Hermit Thrush (*T. Pallasii* Cab.); seen but twice. Olive-backed Thrush (*T. Swainsonii* Cab.); common in a locust nursery last year; wholly absent this year. Ruby-crowned Wren (*R. callendula* Licht.); seen as late as May 2d. *Troglodytidæ*:—Short-billed Marsh Wren (*C. stellaris* Cab.); summer. *Sylvicolidæ*:—Black and White Creeper (*M. varia* Vieill.). Yellow-rumped Warbler (*Dendroica coronata* Gray); common. Chestnut-sided Warbler (*D. Pensylvanica* Baird); summer. Nashville Warbler (*H. ruficapilla* Baird); summer. *Hirundinidæ*:—Rough-winged Swallow (*C. serripennis* Bon.); summer. *Liotrichidæ*:—Mocking Bird (*M. polyglottus* Boie); June 25th, August 4th, and October 21st; in both the central counties mentioned; but no song heard. *Vireonidæ*:—White-eyed Vireo (*V. noveboracensis* Bon.); June 1st. Yellow-throated Flycatcher (*V. flavifrons* Vieill.); summer. Red-eyed Flycatcher (*V. olivaceus* Vieill.); summer. *Fringillidæ*:—Harris's Finch (*Z. querula* Gamb.); taken twice, the latest May 19th. Black Snow-bird (*J. hyemalis* Sclat.); abundant in early spring. Snow-bunting (*P. nivalis* Meyer); Clinton county, and, I think, Poweshiek. Purple Finch (*C. purpureus* Gray); Clinton county. Red Crossbill (*C. Americana*

Wils.); Lee county. White-throated Sparrow (*Z. albicollis* Bon.); October 7th. Tree Sparrow (*S. monticola* Baird); common in March and April. Swamp Sparrow (*M. palustris* Baird); taken in October. Indigo Bird (*C. cyanea* Baird); summer; very common. Cardinal Bird (*C. Virginianus* Bon.); Lee county. *Icteridae*:—Rusty Blackbird (*S. ferrugineus* Sw.); Clinton and Poweshiek counties. *Tyrannidae*:—Yellow-bellied Flycatcher (*E. flaviventris* Baird); summer; not rare. *Cuculidae*:—Yellow-billed Cuckoo (*C. Americanus* Bon.); summer; only taken in a grove in Kellogg, Jasper county. *Picidae*:—Pileated Woodpecker (*H. pileatus* Baird); Lee county. *Strigidae*:—Short-eared Owl (*B. Cassinii* Brewer). *Falconidae*:—Duck Hawk (*F. anatum* Bon.); Clinton county. Sharp-shinned Hawk (*A. fuscus* Bon.); Clinton county. Golden Eagle (*A. Canadensis* Cass.). Bald Eagle (*H. leucocephalus* Savig.). *Columbidae*:—Passenger Pigeon (*E. migratoria* Sw.); few seen; one taken young, June 26th. Gray or Red-breasted Snipe (*M. griseus* Leach); Clinton county. Tell-tale or Stone Snipe (*G. melanoleuca* Bon.); Clinton county. Yellow-legs (*G. flavipes* Bon.); common in prairie sloughs. Solitary Sandpiper (*R. solitarius* Bon.). Marbled Godwit (*L. fedoa* Ord.). *Gruidae*:—White or Whooping Crane (*G. Americanus* Ord.); Tama county. *Rallidae*:—Sora, or Common Rail (*P. Carolina* Vieill.). Coot (*F. Americana* Gm.). *Anatidae*:—Trumpeter Swan? (*C. buccinator* Rich.); young. Brant (*B. brenta* Steph.); large flocks, doubtless this species. Spoonbill (*S. clypeata* Boie); Clinton county. Gadwall (*C. streperus* Gray); Polk and Clinton counties. Ringnecked Duck (*F. collaris* Baird); young. Redbreasted Merganser (*M. serrator* Linn.); Lee county. Hooded Merganser (*L. cucullatus* Reich.); Lee county. Snow Goose (*A. hyperboreus* Pallas); Lee county. *Pelicanidae*:—Rough-billed Pelican (*P. erythrorhynchus* Gm.); Lee county. *Laridae*:—Ring-billed Gull (*L. Delawarensis* Ord.). Forster's Tern? (*S. Forsteri* Nutt.); Clinton county. To this list I may add the Prothonotary Warbler and the Magpie (a straggler), known to have been taken in Lee county. All of the above from Lee and Clinton counties were not taken by myself, but I have no reason to doubt the correctness of the locality given. I thus add fifty-four species to one hundred and eight of Mr. Allen's list, which were observed in seven counties of Western Iowa.

Mr. Allen speaks of the scarcity of certain birds. Of these, the Robin, Blue Bird, Chipping Sparrow, Cat Bird, Yellow War-

bler, Warbling Vireo, Loggerhead Shrike, Bobolink and Great Horned Owl, are abundant in the district now especially reported from. I have not met with Wilson's Thrush, Winter Wren, Titlark, Tennessee and Blue Warblers, Grass Finch, Henslow's Sparrow, Arkansas and Great-crested Flycatchers, Yellow-bellied Woodpecker, Least, Pectoral and Spotted Sandpipers and Sooty Tern. — H. W. PARKER.

THE COLORADO POTATO BEETLE IN NILES, MICHIGAN. — While in Niles, Michigan, this winter, I took somewhat special pains to gain information in regard to the Colorado Potato Beetle, as it had been observed on one farm in that town. On the farm of James Hudson, of whom I made my inquiries, not a bug of this sort was seen before or during the year 1868; but a very few were seen on a farm about half a mile to the west. In the summer of 1869, this beetle appeared on Mr. Hudson's potatoes, when they were about a foot high; when he first saw them only two or three were on a hill, but they increased all through the season.

In April, of 1870, Mr. Hudson in plowing his fields, ploughed up the full grown beetles, and they walked about, being very lively. He planted Early Rose potatoes about April first, and as soon as they were fairly up these beetles commenced their attacks upon them. He began to kill them by squeezing them between two paddles, going over the ground daily, but apparently without checking them. He then mixed Paris Green with ashes and sprinkled the mixture on a dozen rows, the vines at this time being a foot high, and from these rows he secured a fair crop of potatoes. Where the mixture was not sprinkled, the bugs ate all the leaves, and in many cases they ate the stalks to a considerable extent. They now began on a new field hitherto untouched, appearing in such numbers as almost literally to cover both the leaves and the stalks. They were so numerous that in less than an hour one man gathered about twenty quarts of them! They readily drop from the vines and then feign death. The beetles swept right through this field, going at the rate of about ten or twenty rods in a week. Their yellowish eggs were always abundant on the under side of the potato leaves; but they also laid their eggs on weeds, spires of grass, and *even on dry sticks!* While the havoc, above described, was going on, no other species of insects attacked the potatoes. At this time the Colorado bugs were abundant

about the farm-buildings, and even entered the house. Toads are their natural enemies, eagerly devouring them. But on this farm the hens were never seen eating them.

On the farm above mentioned, the bugs disappeared suddenly in the early part of September.

It may be added that they seem to prefer Chenango potatoes to the Early Rose; and that they would hardly touch the Early Goodrich, though growing side by side with the Chenango, which they eagerly devoured. I would also add that these insects do not confine themselves to the vines, but enter the hills and attack the potatoes themselves. — SANBORN TENNEY, *Williams College, February, 1871.*

DESTRUCTIVENESS OF THE WHITE ANTS.* — Having to repair and paint my office a year ago, my boy put my stationery for a few days on the floor, when, to my surprise, I found it all eaten through by the white ants, which are destructive of everything upon this Island. Nothing but teak, and not always that, escapes their fangs. Numbers of houses in Jamestown are fairly gutted by them — doors, window sashes, floors and roofs are all eaten up — so that nothing but the bare walls are now standing, their owners being too poor to rebuild with iron and teak.

I send a volume of Allison's History of Europe, to show you the destructive powers of this extraordinary insect. — THOMAS FETNAM, *United States Consul at St. Helena.*

SINGING MICE. — A communication in the NATURALIST some time ago in regard to musical mice, prepared me for a phenomenon which recently came under my observation, which otherwise would have astonished me beyond conception. I was sitting a few evenings since, not far from a half-open closet door, when I was startled by a sound issuing from the closet, of such marvellous beauty that I at once asked my wife how Bobbie Burns (our canary) had found his way into the closet, and what could start him to singing such a queer and sweet song in the dark. I procured a light and found it to be a *mouse*! He had filled an over-shoe from a basket of pop-corn which had been popped and placed in the closet in the morning. Whether this rare collection of food inspired him with song I know not, but I had not the heart to disturb his corn,

* Communicated by the Smithsonian Institution.

hoping to hear from him again. Last night his song was renewed. I approached with a subdued light and with great caution, and had the pleasure of seeing him sitting among his corn and singing his beautiful solo. I observed him without interruption for ten minutes, not over four feet from him. His song was not a *chirp*, but a continuous song of musical tone, a kind of *to-wit-to-wee-woo-woo-wee-woo*, quite varied in pitch. While observing him I took for granted that he was the common house-mouse (*Mus musculus*), but when he sprang from the shoe to make his escape he appeared like the prairie mouse (*Hesperomys Michiganensis*), a species I had not, however, observed before indoors. I have thus far failed to secure this little rodent musician, but shall continue to do all I can in the way of pop-corn to entertain him, and if his marvellous voice gives him the preëminence in mousedom which he deserves, by the aid of Natural Selection I shall presently have a chorus of mice, in which case you shall receive their first visit. — W. O. HISKEY, *Minneapolis, Minn.*

THE EUROPEAN HORNET IN AMERICA. — This wasp (*Vespa crabro* Linn.) is very common here, and has been to my knowledge for the past twenty-five years, or ever since I have been in this place. I think it is something over twenty years since there was an immense colony in the roof of an old ice house, at the gable end of which was a round hole for air about four or five inches in diameter. This hole formed the entrance to their abode. Both their brood cells and the outer covering are very brittle, so much so, that it is impossible to preserve them whole. The paper seems to be made of green wood, in procuring which, they girdle great quantities of the branches of our lilac bushes.

The mass of comb which I send you, was taken, I think, two years ago last fall. The following are the dimensions of the comb, independent of the outer covering, at the time I secured it: — Eighteen inches long, twenty-three inches in circumference. There were eleven stories or sets of comb. The circumference of each, commencing at the top, was as follows: — 17, 23, 27, 27, 27, 28, 28, 27, 23, 19, 7, inches, making a united circumference of about twenty-one feet. Width of largest cells four lines, making six and a quarter cells to the square inch. This, I believe, makes about one thousand five hundred and eighty-one cells. This nest was between the weather boards and the inner lining of boards, in what

was once an ice house. This cavity was at one time filled with hay, but the hay in many places had settled down, leaving large vacant spaces, in one of which this nest was formed, about four or five feet from the ground. The entrance was by a knot hole.—J. ANGUS, *West Farms, N. Y.*

[Mr. A. J. Olmstead writes us that this hornet has been seen since 1863, at Morristown, N. J., and that the nest is made of the green wood of the lilac. “It does much damage to fruit, but at the same time destroys many insects.”—EDS.]

THE MIGRATION OF HAWKS. — The solitary habits of the Hawks are so frequently referred to in general works, treating of the natural history of these interesting birds, as being especially distinctive of the birds of this family, as to fully indicate the general prevalency of the opinion that they are in no degree gregarious, in confirmation of the observations of Dr. William Wood, published in the February number of the *NATURALIST* (1871), in which he states he and some of his ornithological friends had repeatedly noticed considerable companies of hawks passing over in early spring-time. I may add that I have myself observed numerous similar instances, in the autumn as well as in the spring. At Springfield (Massachusetts), I for several years noticed it as a quite regular occurrence, and I have since observed similar flights of hawks in Iowa. On one occasion (in April, 1862) I noticed hundreds slowly sailing over in the peculiar gyratory manner of these birds. They formed a long loose flock, extending both to the northward and the southward as far as could be seen, the whole company occupying more than an hour in passing a given point. Though soaring at a considerable height, it was easy to see that the company was composed of representatives of several species. While this mode of migration is more characteristic, perhaps, of our *Buteones* (the Red-tailed, Red-shouldered, and Broad-winged Hawks) than of other species, the common *Accipiter Cooperi* is frequently associated with them.—J. A. ALLEN.

LONGEVITY OF A MARINE SHELL. — Mr. Tryon (Conch. Sec. Acad. Nat. Sci., Philad.) read a letter from Mr. W. M. Gabb, who collected *Littorina muricata* in the first week in September, specimens of which were now living, although having been out of water not less than four months. This he believed was the first case, on record, of the longevity of life illustrated in marine species.

THE WING OF BATS.—In Max Schultze's "Archiv," Band vii., 1^{tes} Heft, is a most exhaustive and interesting paper on the structure of the bat's wing, by Dr. Joseph Schöbl, of Prague. Long ago Spallanzani discovered that bats which had their eyes put out were able, nevertheless, when allowed to fly about in a room, to avoid threads stretched across it. This faculty he attributed to some highly developed sense of touch possessed by the wing. Dr. Schöbl has repeated these experiments; but for the putting out of the eyes he has substituted the less painful method of covering them with sticking plaster. He has kept bats, thus treated, for a year alive in his room, and has entirely confirmed Spallanzani's results. To account for these phenomena, the wings of bats have been examined for peculiar nerve-endings, by Cuvier, Leydig, and Krause, but without any success. The author's discoveries are therefore quite new to science. The following is a short abstract of his results. The bat's wing membrane consists of two sheets of skin, the upper derived from that of the back, the lower from that of the belly. The epidermic and Malpighian layers in each sheet remain separate, whilst the true skin is inseparably fused. In this fused medium layer are imbedded the muscles, nerves, vessels, etc., of the wing. A complicated arrangement of delicate muscles is described, which have their tendons formed of elastic tissue instead of the usual white fibrous tissue. There are also present numerous long elastic bundles stretched in different directions in different regions of the wing. The arteries are each accompanied by a single vein and a nerve, the three keeping company as far as the commencement of the capillary system. With regard to the pulsation in the wing, Dr. Schöbl has nothing new to add to the observations of Wharton Jones and Leydig. The whole wing is covered, both on the upper and under surface, with extremely fine, sparsely scattered hairs. These hairs are most numerous on the inner third of the hinder part of the wing, and they gradually decrease in number towards the tip. The two wings, taken together, contain from eight thousand to ten thousand of them. They have a general resemblance to those on the body, but are simpler in form. Their length is about 0.2500^{mm} in *Vesperugo serotinus*, the species principally made use of in these investigations. Each hair sac has from two to seven sebaceous glands, according to the species, and one sweat gland opening into its sac. The two outer fibrous layers of the hair sac have no sharp line of demarcation

to separate them from the surrounding connective tissue, but the inner or hyaline coat is highly developed, and, after being constructed beneath the hair bulb, widens out and encloses the sense-bodies (Tastkörperchen), one of which organs is connected with each hair.

The nerves of the wing may be considered to consist of five layers, *i. e.*, there is one occupying the centre of a transverse section of the wing, which gives off on each side of it four others, and these are successively finer and finer as they approach the opposite surfaces. The inner layer and the one immediately on each side of it, consist of nerve fibres with dark borders, the other layers of pale fibres only. The tastkörperchen are connected with the second layer. The fifth layer of finest fibres ends as a network between the innermost layer of cells of the Malpighian layer of the epidermis. The tastkörperchen are shaped like a fir-cone with a rounded apex turned inwards. They lie immediately below the root of the hair; and their core or central substance is formed of a prolongation of the cells forming the two root sheaths of the hair. Their length is 0.0259 and their breadth 0.0175^{mm}. A nerve containing about six dark-edged fibres is distributed to each körperchen. Just before the nerve reaches this organ it splits into two, and three fibres pass to one side of it, three to the other. The fibres are then wound round the body so as to sheathe its cellular core. Dr. Schöbl thinks it probable that the fibres on one side are continuous with those on the opposite side, and that there is thus a bipolar arrangement here. He attributes to the fine network of pale nerve fibres belonging to the fifth layer the appreciation of temperature, pain, etc.; to the tastkörperchen the highly exalted sense of touch. It is curious that both kinds of nerve endings are connected with the Malpighian layer of the skin. In conclusion, the author states that he believes he has found similar bodies in peculiarly sensitive places in other mammals, and promises an early account of them.—*The Academy*.

DIFFERENCES BETWEEN YOUNG AND ADULT FISHES.—Mr. R. Bliss, at a meeting of Bost. Nat. Hist. Soc., spoke of some of the markings which distinguish young from adult fishes. He had recently examined some specimens from India which had a double line on the median space; or rather a single line starting from the gill-

covers, running to the tail and then returning to the gill-covers. He found this to be the young state, and this the manner in which a dark, solid band was formed and became perfect when the fish reached the adult state. Another species forms a band which disappears, leaving only one spot at the head and another at the tail. A third species begins with a band and ends with cross striæ, the band disappearing. These examples, he said, show the necessity of studying fishes in all stages of their growth.

CARDINAL GROSBEAK.—On the 31st of January last, a day to be remembered as one of the coldest of this very cold winter, a specimen of the female Cardinal Grosbeak (*Cardinalis Virginianus* Bonap.) was shot in the spruce woods at Point Pleasant, about one mile from Halifax. The plumage of the bird forbade the idea of its having escaped from confinement, while its shyness, coupled with the fact of its being found on skinning to be actually fat and in good condition, precluded the possibility of its being a storm-blown waif, brought by a revolving gale from the south. Its crop contained a few partially digested seeds, cereal in appearance.—J. MATTHEW JONES, *Halifax, Nova Scotia*.

ARRIVAL OF BIRDS.—On March 9th the first Bluebirds and Robins made their appearance in Salem, and on March 10th two flocks of geese passed over the city on their northern journey. The White-bellied Swallow was not noticed before April 2d.

THE CHITONS.—Dr. P. P. Carpenter, of Montreal, made a verbal communication to the Boston Society on the family of Chitons ; but, as his Monograph of the group is now in the press, and will shortly be published by the Smithsonian Institution, it is not necessary to anticipate his results. If any naturalists have species which they wish reported on, he will be happy to name them from the typical series, which (with his other collections) he has presented to the Museum of McGill College.

CATTLE TICK IN THE HUMAN EAR.—Enclosed you will find a tick the history of which is this :—A young man applied to Dr. Boucher, of Iowa City, for a trouble of the ear. Four months before he had been in New Mexico and had slept out of doors many times. The trouble of the ear commenced about that time. His ear pained him many times but not severely. On looking into his ear foreign material was seen, and on removal proved to be the

bug enclosed. It was alive and lived three days thereafter.—E. H. HAZEN, M. D., *Davenport, Iowa.*

[It is a species allied to *Ixodes bovis* Riley, or common cattle tick.—Eds.]

AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE.—The Board of Trade of Indianapolis recently held a meeting for the purpose of making arrangements for the next meeting of the A. A. A. S., which will be held at Indianapolis in August next, beginning on Wednesday, the 16th. The meeting was largely attended and a Local Committee of one hundred persons was appointed and divided into sub-committees on *Reception, Finance, Lodging, Excursions, Rooms, Invitations, and Railroads*. Arrangements were made for two excursions during the session of the Association. One to Terre Haute, a distance of seventy-three miles from Indianapolis, where the Association will remain over night and partake of the hospitality of the citizens. On this excursion a visit will be made to the celebrated Block-coal field (iron smelting coal) and Blast furnaces, of Clay County. This coal is now attracting much attention and the visit will be most interesting geologically. The other excursion proposed is to New Albany, on the Ohio River, where there are a number of interesting manufactories, among them the only plate glass works in the United States. One of the largest railroad bridges in the world is also located there. The Association will also remain at New Albany over night.

The people of Indianapolis and vicinity seem to be resolved to make the forthcoming meeting a success, and every facility and accommodation will be secured to the members of the Association.

The following are the officers of the Local Committee:—*Chairman*, Hon. DANIEL MACAULEY; *Vice Presidents*, THOMAS MCGUIRE, Esq., and JOHN C. WRIGHT, Esq.; *General Secretary*, T. B. ELLIOTT, Esq.; *Corresponding Secretary*, Professor E. T. COX; *Treasurer*, F. A. W. DAVIS, Esq.

The following are the officers of the Association for the Indianapolis meeting:—*Retiring President*, Dr. T. STERRY HUNT, Montreal; *President*, Professor ASA GRAY, Cambridge; *Vice President*, Professor G. F. BARKER, New Haven; *Permanent Secretary*, Professor JOSEPH LOVERING, Cambridge; *General Secretary*, F. W. PUTNAM, Salem; *Treasurer*, W. S. VAUX, Philadelphia.

We understand that the sub-section of *Microscopy*, so well started at the Salem meeting, and developed at Troy, will be well represented at the next meeting, and we beg to suggest to the Local Committee the importance of providing a room with proper light and substantial tables for the use of this sub-section, and a safe place for the deposit of the instruments that undoubtedly will be taken to the meeting if members are notified in the general circular that such arrangements have been made.

We also trust that some change will be made by the Association in relation to the Proceedings on the first day, and the time of delivery of the President's address, which certainly should come off before he resigns the chair to his successor, and there seems no more appropriate time for the delivery of the address than the first evening, which it would be well to have permanently allotted to this purpose by vote of the Association. The organization of the meetings of the Association could be very much facilitated by a complete change of the present irregular and confusing mode of proceeding, and we trust the next meeting will inaugurate a decided change in this respect.

Members will remember that the titles of their papers must be sent in advance to the *Permanent* Secretary.

In this connection we call attention to a circular, which has been mailed to the address of every member from the office of the NATURALIST, in relation to the early publication of the papers to be read at the meeting, and to request any person, who has not received a copy and who intends to read a paper in any of the Natural History Sections, to send to the office of the AMERICAN NATURALIST for one.



GEOLOGY.

SOME PHYSICAL FEATURES OF THE APPALACHIAN SYSTEM AND THE ATLANTIC COAST OF THE UNITED STATES, ESPECIALLY NEAR CAPE HATTERAS. — At the meeting, February 1st., of the Boston Society of Natural History, Professor N. S. Shaler gave an account of the coast line in the neighborhood of Cape Hatteras and the Chesapeake Bay. He thought it important in view of the Zoological as well as the physical history of the continent, to determine the causes which had given the existing form to the shore line of this continent. The coast between the Rio Grande and the Chesapeake, presents but two considerable prominences. The first,